REVISED

BIOENGINEERING RESEARCH PARTNERSHIPS

Release Date: November 30, 1999 (Superceded by PA-01-024)
(Supercedes October 15, 1999 version)

PA NUMBER: PAS-00-006

National Cancer Institute
National Center for Research Resources
National Eye Institute
National Human Genome Research Institute
National Heart, Lung, and Blood Institute
National Institute on Aging
National Institute of Allergy and Infectious Diseases
National Institute of Arthritis and Musculoskeletal and Skin Diseases
National Institute of Child Health and Human Development
National Institute on Drug Abuse
National Institute on Deafness and Other Communication Disorders
National Institute of Dental and Craniofacial Research
National Institute of Diabetes and Digestive and Kidney Diseases
National Institute of Environmental Health Sciences
National Institute of General Medical Sciences
National Institute of Mental Health
National Institute of Neurological Disorders and Stroke
National Institute of Nursing Research
National Library of Medicine

Letter of Intent Receipt Dates: December 15, 1999 and June 30, 2000
Application Receipt Dates: January 7, 2000 and August 10, 2000

PURPOSE

Participating Institutes and Centers (ICs) of the National Institutes of Health (NIH) invite applications for R01 awards to support Bioengineering Research Partnerships (BRPs) for basic bioengineering research addressing important biological or medical research problems. A BRP is

a multidisciplinary research team applying an integrative, systems approach to develop knowledge and/or methods to prevent, detect, diagnose, and treat disease and understand health and behavior. The partnership must include bioengineering expertise in combination with basic and/or clinical investigators. A BRP may propose design-directed or hypotheses-driven research in universities, national laboratories, medical schools, private industry and other public and private entities.

On October 29, 1998, NIH issued PAR-99-009 (http://grants.nih.gov/grants/guide/pa-files/PAR-99-009.html for Bioengineering Research Grants (BRGs). BRG applications are also funded as R01 awards. They differ from the BRP applications in that the research is generally performed in a single laboratory or by a small number of investigators.

HEALTHY PEOPLE 2000

The Public Health Service (PHS) is committed to achieving the health promotion and disease prevention objectives of "Healthy People 2000," a PHS-led national activity for setting priority areas. This PA, Bioengineering Research Partnerships (BRP), is related to all priority areas. Potential applicants may obtain a copy of "Healthy People 2000" (Full Report: Stock No. 017-001-00474-0 or Summary Report: Stock No. 017-001-00473-1) through the Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325 (Tel: 202-512-1800)or at http://odphp.osophs.dhhs.gov/pubs/hp2000

ELIGIBILITY REQUIREMENTS

Applications may be submitted by domestic for-profit and non-profit organizations, public and private, such as universities, colleges, hospitals, laboratories, units of State and local governments, and eligible agencies of the Federal government. Foreign institutions are not eligible to apply, but BRP collaborative projects may include work at a foreign site when the expertise at the foreign site is not present in the United States. Racial/ethnic minority individuals, women, and persons with disabilities are encouraged to apply as principal investigators.

MECHANISM OF SUPPORT

The mechanism of support will be the regular research grant (R01). Responsibility for the planning, direction, and execution of the proposed project will be solely that of the applicant. The total requested project period may not exceed five years.

An applicant planning to submit an application for this PA requesting $500,000 or more in direct costs for any year is advised that NIH policy requires an applicant to obtain agreement for acceptance of both any such new application and/or any subsequent amended application. Refer to the NIH Guide for Grants and Contracts, March 20, 1998, which is available on the Internet at the following URL address: http://grants.nih.gov/grants/guide/notice-files/not98-030.html.

To obtain agreement, an applicant must contact IC program staff (listed under INQUIRIES) before submitting the application; i.e., as plans for the study are being developed. Furthermore, the applicant must obtain written agreement from IC staff that the IC will accept the application for consideration for award.

FUNDS AVAILABLE

The estimated total funds (direct and facilities and administrative costs) available in FY 2001 for the first year of support for awards under this PA will be approximately $12 million. Because the nature and scope of the research proposed in response to this PA may vary, it is anticipated that the size of the awards will vary also. For any grant, the maximum total costs to be awarded in any year is $2 million. The number of awards and level of support will depend upon receipt of a sufficient number of applications of high scientific merit. Although this PA is provided for in the financial plans of the participating ICs, awards pursuant to this PA are contingent upon the availability of funds. Funding beyond the first and subsequent years of the grant will be contingent upon satisfactory progress during the preceding years and the availability of funds. Applicants are encouraged to discuss budget requests with program staff listed under INQUIRIES prior to submission. The initial period of support for a BRP award may be up to five years. The award may be competitively renewed for a second period (up to five years) based on peer review of a renewal application. NIH does not envision more than one renewal period.

RESEARCH OBJECTIVES

Background

Many of today's biological problems are too complex to be solved by biologists alone; partners are needed in many disciplines, including physics, mathematics, chemistry, computer sciences, and engineering. Bioengineering integrates principles from a diversity of fields. The creativity of interdisciplinary teams is resulting in new basic understanding, novel products, and innovative

technologies. Bioengineering also crosses the boundaries of academia, science, medicine, and industry.

Recognizing the increasing importance of bioengineering in public health, the NIH established the Bioengineering Consortium (BECON) as a central focus for NIH bioengineering research. BECON held a two-day Bioengineering Symposium on February 27-28, 1998. A summary of the presentations and the conclusions of the panels are included in the full report which is available on the Internet at the following URL: (http://www.nibib.nih.gov/)

The discussions and recommendations of symposium participants aided in the formulation of the BRP and BRG PAs. For example, both the BRP and BRG PAs recognize that applications for bioengineering projects are often focused on technology development rather than on proving or disproving a scientific hypothesis. Therefore, the NIH review criteria for bioengineering applications submitted in response to these PAs have been modified to ensure that these applications are evaluated appropriately and fairly.

Objective and Scope

The objective of this program announcement is to encourage research in selected basic bioengineering areas. Bioengineering is defined as follows: Bioengineering integrates physical, chemical, or mathematical sciences and engineering principles for the study of biology, medicine, behavior, or health. It advances fundamental concepts, creates knowledge from the molecular to the organ systems level, and develops innovative biologics, materials, processes, implants, devices, and informatics approaches for the prevention, diagnosis, and treatment of disease, for patient rehabilitation, and for improving health.

Each BRP should bring together the necessary engineering, basic science, and/or clinical expertise to focus on a significant area of bioengineering research within the mission of the NIH. A BRP can vary in size and exhibit diverse forms of organization, participation, and operation. No single type of BRP fits the needs of every area. Rather, the size, structure, and operation of a BRP are determined by the proposed research.

Areas of Bioengineering Research for a BRP.

Applications for BRP awards should focus on an area of bioengineering research where progress is likely to make a significant contribution to improving human health. It is likely that these areas will be of interest to many ICs. For example, materials science may be relevant to the ultimate

development of artificial organs or novel medical implants; thus a research initiative in materials science would be of interest to many ICs, even though it is not clear at the outset which organ or which IC will benefit from advances in the field. Similarly, bioinformatics may provide analysis and modeling tools for large sets of biological data, may facilitate home-based devices, and may create networks to help manage chronic diseases. Imaging may be applied to the monitoring of cellular processes, elucidation of developmental processes in the organism, identification and localization of disease or its progression, development of virtual reality training tools, and monitoring of therapeutic interventions. Micro- and nano- fabrication and fluidics may be applied to creating in vivo sensors, biochemical analysis systems, imaging systems, and surgical devices.

Bioengineering areas of particular relevance to the mission of ICs are identified below. The topics listed are not intended to be exclusive.

Bioengineering Research Areas

- Biomechanics
- Bioprocessing
- Bioelectrics, Ion Channels, and Organ Function
- Clinical Medicine, Therapeutics & Drug Delivery
- Combinatorial Approaches to Chemistry, Materials, Genes, and Therapeutics
- Functional Genomics including Microarray Technology, Integrated Systems, and Analysis Tools
- Imaging
- Nanotechnology
- Informatics and Computational Methods
- Medical Implants, Biomembranes, Sensors and Devices
- Complex Biological Systems
- Organ Culture Systems and Organogenesis
- Rehabilitation, Prostheses
- Cell and Tissue Engineering and Biomaterials
- Tissue Regeneration
- Integrative Physiology
- Drug Bioavailability

Organizational Structure

An organizational structure which clearly defines the partnership and relationships among the various components must exist.

BRP Leadership and Management

The BRP Principal Investigator (PI) is responsible for management, staffing, and resource allocation and for administering the award in accordance with NIH policies. The PI has both the responsibility and authority to use BRP funds in the most productive way to achieve the goals proposed in the application. To accomplish this task, the PI should adjust BRP funding among BRP participants to support new Partners or to reduce support to old Partners as needed. The PI's administrative structure will depend upon the size and scope of the proposed research. For example, there may be less involvement of a clinical component in the early stages of a BRP and far more when the issue of clinical application is more salient.

Annual BRP PI Meeting.

BRP PIs will meet annually to share substantive results, to ensure that the NIH has a coherent view of the advances in these fields, and to have an opportunity for collective problem solving among the BRPs. The cost of participating in the BRP PI annual meeting should be built into the BRP budget.

INCLUSION OF WOMEN AND MINORITIES IN RESEARCH INVOLVING HUMAN SUBJECTS

It is the policy of the NIH that women and members of minority groups and their sub-populations must be included in all NIH supported medical and behavioral research projects involving human subjects, unless a clear and compelling rationale and justification are provided that inclusion is inappropriate with respect to the health of the subjects of the purpose of the research. This policy results from the NIH Revitalization Act of 1993 (Section 492B of Public Law 103-43).

All investigators proposing research involving human subjects should read the "NIH Guidelines for Inclusion of Women and Minorities as Subjects in Clinical Research," which have been published in the Federal Register of March 28, 1994 (FR 59 14508-14513) and the NIH Guide for Grants and Contracts, Vol. 23, No. 11, March 18, 1994, which is available on the Internet at the following URL address: (http://grants.nih.gov/grants/guide/notice-files/not94-100.html).

Investigators may obtain copies from these sources or from the program staff listed under INQUIRIES. Program staff may also provide additional relevant information concerning the policy.

INCLUSION OF CHILDREN AS PARTICIPANTS IN RESEARCH INVOLVING HUMAN SUBJECTS

It is the policy of NIH that children (i.e., individuals under the age of 21) must be included in all human subjects research, conducted or supported by the NIH, unless there are scientific and ethical reasons not to include them. This policy applies to all initial (Type 1) applications submitted for receipt dates after October 1, 1998.

All investigators proposing research involving human subjects should read the "NIH Policy and Guidelines on the Inclusion of Children as Participants in Research Involving Human Subjects" that was published in the NIH Guide for Grants and Contracts, March 6, 1998, and is available at the following URL address: (http://grants.nih.gov/grants/guide/notice-files/not98-024.html)

Investigators may obtain copies from these sources or from the Program Contact person listed under INQUIRIES who may also provide additional relevant information concerning the policy.

LETTER OF INTENT

Prospective applicants are asked to submit by December 15, 1999, a letter of intent that includes a descriptive title of the overall proposed research; the name, address, and telephone number of the Principal Investigator; the identities of other key personnel and participating institutions; and the number and title of the PA in response to which the application may be submitted.
Although the letter of intent is not required, is not binding, and does not enter into the review of a subsequent application, the information it contains allows NIH staff to estimate the potential review workload and avoid conflict of interest in the review.

The letter of intent is to be sent via email to BRP2@od.nih.gov. An acknowledgement of receipt will be provided.

APPLICATION PROCEDURES

Applicants are strongly advised to contact IC program staff listed under INQUIRIES to discuss the responsiveness of their plans before developing a detailed research application. Applicants are reminded that Institute or Center approval must be obtained for submission of applications whose annual direct costs exceed $500,000 in any year. Since a BRP award may include funds from a single IC or from several NIH ICs, applicants may be directed to contact IC program staff in more than one IC. The use of email for such communication is strongly recommended.

Applications will be accepted on the receipt dates of January 7, 2000 and August 10, 2000.

Electronic Submission of Applications for the August 10, 2000 Receipt Date:

Directions for submitting electronically will be posted in the NIH Guide and the BECON website well in advance of the August receipt date. Applications for the January receipt date should use the PHS 398 application in the usual paper format.

Submission of Applications

Applications should be submitted on the grant application form PHS 398 (rev. 4/98). Application kits are available at most institutional offices of sponsored research and may be obtained from the Division of Extramural Outreach and Information Resources, National Institutes of Health, 6701 Rockledge Drive, MSC 7910, Bethesda, MD 20892-7910, Telephone: (301) 435-0714, Email: grantsinfo@nih.gov. Application kits are also available on the Internet at URL address: (http://grants.nih.gov/grants/funding/funding.htm).

Application Instructions

Follow the PHS 398 instructions for "Preparing Your Application" with modifications and additions as described in the sections below.

Page limitations. Page limitations have been increased from the normal 25 page limit for sections A-D of the "Research Plan" of an application. For applications in response to this program announcement, the page limitation is a maximum of 40 pages for sections A-D. This 40 page limit is an absolute maximum and applicants are encouraged to be concise and use fewer pages.

Title and Abstract. Identify the institution leading the BRP and any other participating institutions. The abstract should provide clear descriptions of the area of bioengineering research that will be

the focus of the BRP, the planned multidisciplinary approach, and the specific milestones to be achieved and timelines for achievement for the first year and additional years of the grant.

Partnership Organization. An organization chart (OC) must be included in the application. It should clearly define the partnership and relationships among its various components. A program plan (PP) should accompany the OC and list major tasks with a timeline of expected milestones for the entire project period. The OC and PP must not exceed one page each.

BRP BUDGET ITEMS

Proposed Budget Organization. Include a separate budget for each Partner at a non-grantee institution, and when appropriate for clarity, for each Partner within the grantee institution. Include a summary budget for all BRP participants with Partners at non-grantee institutions shown as consultants or consortium arrangements.

Maximum Request and Award Level. The NIH ICs will not provide annual support in excess of $2 million total cost in any year. Direct cost inflationary increases following the first year may be included, but the total cost maximum request level of $2,000,000 must be adhered to.

Personnel. Percent Effort - The PI is expected to devote a minimum of 25% effort to the BRP. The percent effort requested for other personnel should be limited to time devoted specifically to BRP Partner activities and not to other research activities. Information documenting the level of effort on BRP activities should be included in the application. The need for all requested personnel costs should be thoroughly justified. The percent effort of the BRP PI should be justified in the context of the PI's other responsibilities. Administrative support (a secretary or an administrative assistant) may be requested for the BRP office only for matters directly pertaining to the BRP.

Travel. BRP PI meeting(s) - There will be an annual BRP PI meeting at a location to be determined by NIH staff. The PI meeting will be held at NIH, at a BRP site, or at the site of a scientific conference that many of the PIs plan to attend. The BRP PI and at least one other BRP scientist should attend the annual meeting. Additional BRP members are welcome. Applicants should include travel funds specifically for these meetings in the BRP budget request. For budget purposes, applicants may assume that total annual costs to the grant for the BRP PIs meeting will not exceed $2500.

Other Travel - Applicants may request and justify travel funds in addition to the funds required for the Annual PI Meeting. Travel funds could be used to promote collaboration among BRP partners at different institutions or at a distant site, be used for travel of external advisors to the BRP site, and/or be used for BRP Partners to attend scientific meetings essential to the progress of the BRP and for which other funds are not available.

Other Expenses. This category includes the costs necessary for the central administration and fiscal management of the BRP including relevant and reasonable costs for reprints, graphics, and publications.

Projected Funding by Source. Some BRP applicants may anticipate or receive commitments for significant funding from other than NIH sources; e.g., from a collaborating company. When this is the case, applications should describe the source, annual amount, and use of the other funding.

OTHER SUPPORT

Provide a complete listing of current and pending support for the Principal Investigator, Co-Investigator(s), and non Co-Investigator Senior Personnel only.

RESOURCES

Facilities and Equipment. Describe the equipment and facilities available to the proposed BRP.

Institutional commitment. If the BRP implies an institutional commitment of resources across boundaries in the institution or anticipates the provision of institutional resources, please include letters from relevant senior level individuals describing those commitments.

Shared Experimental Facilities. Where appropriate, describe the shared facilities to be established, including specific major research instrumentation, and plans for the development of instrumentation. Describe plans for maintaining and operating the facilities, including staffing, provisions for user fees, and plans for ensuring access to outside users. Distinguish between existing facilities and those still to be developed.

RESEARCH PLAN

A. Specific Aims. Describe the specific aims in the selected area of bioengineering research and the goals for the first year and for the long term.

Delineate the design principle(s) supporting the research or the hypothesis (-es) to be tested. Describe the expected applications of the bioengineering research that will improve human health. One page is recommended.

B. Background and Significance. Briefly describe the area of bioengineering research that is the focus of the BRP. Critically evaluate existing knowledge and approaches that have been or are being directed in the area, and specifically describe how the BRP approach will advance the field. State concisely the importance and health relevance of the proposed research to the Specific Aims.

C. Preliminary Studies and Rationale. Preliminary studies are not required for BRP applications, but applicants with preliminary results should describe them. In the absence of preliminary results, applicants should describe the rationale and scientific and engineering bases for the proposal.

D. Research Design and Methods. A BRP should focus on a systems approach in a significant area of bioengineering research. Describe an overall research plan that is sufficiently long term (5-10 years) to justify a BRP organization and adaptable enough to permit change as the research proceeds. Clearly indicate current activities, why a BRP is necessary, and what unique opportunities will be provided by the proposed BRP. Explain the integrative-engineering approach and why such an approach is essential to the proposed research. If the proposed BRP research is closely related to ongoing research or an existing Center, explain how the research activities of the BRP will complement but not overlap with existing research. Describe the efforts of each Partner and how these will be integrated and organized to accomplish the specific aims of the project. Provide a tentative sequence or timetable for the project. Include how the data will be collected, analyzed, and interpreted. Describe how the data and technological advances will be disseminated to other investigators, and if relevant, how the technology information (intellectual property) will be transferred to the commercial sector for product development.

SUBMISSION OF APPLICATIONS

The title and number of this program announcement must be typed on line 2 of the face page of the application form and the YES box must be marked. Submit a signed, typewritten original of the application, including the Checklist, and five signed photocopies in one package to:

CENTER FOR SCIENTIFIC REVIEW
NATIONAL INSTITUTES OF HEALTH
6701 ROCKLEDGE DRIVE, ROOM 1040 - MSC 7710
BETHESDA, MD 20892-7710
BETHESDA, MD 20817 (for express/courier service)

APPENDICES

Applicants are advised that the 40-page application itself should contain all relevant information. Reviewers have no obligation to read appendices. Appendix materials should not be submitted with the application. Applicants who wish to send appendices should wait until they receive notification that the application has been assigned to an Initial Review Group. At that time they should contact the Scientific Review Administrator of the committee to which their application is assigned to receive further instructions.

The Center for Scientific Review (CSR) will not accept any application in response to this PA that is essentially the same as one currently pending initial review, unless the applicant withdraws the pending application. The CSR will not accept any application that is essentially the same as one already reviewed. This does not preclude the submission of substantial revisions of applications already reviewed, but such applications must include an introduction addressing the previous critique.

REVIEW CONSIDERATIONS

Upon receipt, applications will be reviewed for completeness by the NIH Center for Scientific Review (CSR), and for responsiveness by program staff of the IC to which an application is assigned. Incomplete and/or non-responsive applications will be returned to the applicant without further consideration. Applications that are complete and responsive will be evaluated for scientific and technical merit by Scientific Review Groups (SRGs) of CSR. As part of the initial merit review, all applications will receive a written critique and undergo a process in which only those applications deemed to have the highest scientific merit, generally the top half of applications under review, will be discussed, assigned a priority score, and receive a second level review by the appropriate national advisory council or board.

Review Criteria

The NIH review criteria have been adapted to ensure that the BRP application is evaluated appropriately. The score should reflect the overall impact that the BRP award could have on the selected area of bioengineering research based on consideration of the five criteria, with the emphasis on each criterion varying from one application to another, depending on the nature of the application and its relative strengths. Note that an application need not be strong in all categories to be judged likely to have major scientific impact and thus deserve a high priority score. For example, an investigator may propose to carry out important work that by its nature is not innovative but is essential to move a field forward. The review criteria follow:

(1) Significance. If the Specific Aims of the BRP are achieved, will they provide significant advances in the selected area of bioengineering research? Is the research likely to have a significant impact on other areas of research? Will the technological advances have a significant impact on human health?

(2) Approach. Are the BRP engineering, scientific and clinical approaches and methods adequately developed, well integrated, and appropriate to the aims of the project? Does the applicant acknowledge potential problem areas and consider alternative tactics? Are the milestones and evaluation procedures appropriate? Are the plans for information dissemination and technology transfer reasonable?

(3) Innovation. Does the BRP propose new approaches or explore new research paradigms or new concepts that combine engineering, basic and clinical sciences? Are extant approaches or concepts applied to new scientific problems in novel ways?

(4) Investigators. Is the PI capable of coordinating and managing the proposed BRP? Are the investigators (Partners) appropriately trained in their disciplines and well suited to carry out the proposed work? Is there evidence that the Partners can work together effectively? Do the advantages of a Partner at a distant site outweigh the disadvantages?

(5) Environment. Does the scientific and technological environment in which the work will be done contribute to the probability of success? Does the proposed research take advantage of unique features of the scientific environment or employ useful collaborative arrangements? Is there evidence of institutional support?

In addition to these five review criteria, applicants must demonstrate adequate provisions for the protection of human and animal subjects, the safety of the research environment, and conformance with the "NIH Guidelines for the Inclusion of Women and Minorities as Subjects in Clinical Research," and "NIH Policy and Guidelines on the Inclusion of Children as Participants in Research Involving Human Subjects."

AWARD CRITERIA

BRP applications will compete for available funds with all other recommended applications. The following will be considered in making funding decisions:

- Quality of the proposed research as determined by peer review
- Availability of funds
- Institute's priority for area of proposed research

INQUIRIES

The opportunity to clarify any issues or questions regarding a BRP or a BRP application is welcome.

General questions regarding the BRP may be directed to:

Richard Swaja, Ph.D.; Senior Advisor for Bioengineering, Office of Extramural Research, Building 1, Room 152, Bethesda, MD 20892; telephone (301) 402-2725; email: ds371q@nih.gov

Specific questions regarding BRP scientific issues, management issues, or issues on cores related to participating ICs may be directed to:

NCI - Carol Dahl, Ph.D.; National Cancer Institute; Building 31, Room 11A03, MSC 2590; Bethesda, MD 20892-2590; Telephone: (301) 496-1550; FAX: (301) 496-7807; Email: cd41x@nih.gov

NCRR - Richard Dubois, Ph.D.; Biomedical Technology; National Center for Research Resources; 6705 Rockledge Drive, Room 61060, MSC 7965; Bethesda, MD 20892-7965; Telephone: (301) 435-0755; FAX: (301) 480-3659; Email: rickard@ncrr.nih.gov

NEI - Lore Anne McNicol, Ph.D.; National Eye Institute; 6120 Executive Boulevard, Suite 350, MSC 7164; Bethesda, MD 20892-7164; Telephone: (301) 496-5301; FAX: (301) 402-0528; Email: lm27f@nih.gov

NHGRI - Jeffery A. Schloss, Ph.D.; Division of Extramural Research; National Human Genome Research Institute; Building 31, Room B2B07, MSC 2033; Bethesda, MD 20892-2033; Telephone: (301) 496-7531; FAX: (301) 480-2770; Email: js173g@nih.gov

NHLBI - John T. Watson, Ph.D.; Acting Deputy Director; National Heart, Lung, and Blood Institute; 9000 Rockville Pike, Room 5A49; Bethesda, MD 20892; Telephone: (301) 435-0513; FAX: (301) 402-3686; Email: jw53f@nih.gov

NIA - Evan Hadley, M.D.; Geriatrics; National Institute on Aging; Gateway Building, Suite 3E327, MSC 9205; Bethesda, MD 20892-9205; Telephone: (301) 435-3044; FAX: (301) 402-1784; Email: hadleye@exmur.nia.nih.gov

NIAID - Vicki Seyfert, Ph.D.; National Institute of Allergy and Infectious Diseases; 6003 Executive Boulevard, Room 4A21; Rockville, MD 20852; Telephone: (301) 496-7551; FAX: (301) 402-2571; Email: vs62y@nih.gov

NIAMS - James S. Panagis, M.D., M.P.H.; Musculoskeletal Diseases Branch; National Institute of Arthritis and Musculoskeletal and Skin Diseases; 6500 Center Drive, Room 5AS-37K; Bethesda, MD 20892-6500; Telephone: (301) 594-5055; FAX: (301) 480-4543; Email: jp149d@nih.gov

NICHD - Louis A. Quatrano, Ph.D.; National Center for Medical Rehabilitation Research; National Institute of Child Health and Human Development; Building 61E, Room 2A03; Bethesda, MD 20892-7510; Telephone: (301) 402-2242; FAX: (301) 402-0832; Email: lq2n@nih.gov

NIDA - Thomas G. Aigner, Ph.D.; Division of Basic Research; National Institute on Drug Abuse; 6001 Executive Boulevard, Room 4282, MSC 9555; Bethesda, MD 20892-9555; Telephone: (301) 443-6975; FAX: (301) 594-6043; Email: ta17r@nih.gov

NIDCD - Lynn E. Luethke, Ph.D.; National Institute on Deafness and Other Communication Disorders; 6120 Executive Boulevard, MSC 7180; Bethesda, MD

20892-7180; Telephone: (301) 402-3458; FAX: (301) 402-6251; Email: lynn_luethke@nih.gov

NIDDK - Joan T. Harmon, Ph.D.; Division of Diabetes, Endocrinology, and Metabolic Diseases; National Institute of Diabetes and Digestive and Kidney Diseases; 45 Center Drive, Room 5AN-18G, MSC 6600; Bethesda, MD 20892-6600; Telephone: (301) 594-8808; FAX: (301) 480-3503; Email: HarmonJ@extra.niddk.nih

NIDCR - Eleni Kousvelari, D.D.S., D.Sc.; Chief - Biomaterials, Biomimetics, and Tissue Engineering Branch; National Institute of Dental and Craniofacial Research; Natcher Building, Room 4AN 18A, MSC 6402; Bethesda, MD 20892-6402; Telephone: (301) 594-2427; FAX: (301) 480-8318; Email: kousvelari@de45.nidr.nih.gov

NIEHS - Jose Velazquez, Ph.D.; Division of Extramural Research Training; National Institute for Environmental Health Sciences; P.O. Box 12233, MSC EC-21; Research Triangle Park, NC 27709; Telephone: (919) 541-4998; FAX: (919) 541-2860; Email: velazqu1@niehs.nih.gov

NIGMS - Warren Jones, Ph.D.; Division of Pharmacology, Physiology and Biological Chemistry; National Institute of General Medical Sciences; 45 Center Drive, Room 2AS-43H, MSC 6200; Bethesda, MD 20892-6200; Telephone: (301) 594-5938; FAX: (301) 480-2802; Email: jonesw@nigms.nih.gov

NIMH - Michael F. Huerta, Ph.D.; Division of Neuroscience and Basic Behavioral Sciences; National Institute of Mental Health; 6001 Executive Boulevard, Room 7202, MSC 9645; Bethesda, MD 20892-9645; Telephone: (301) 443-3563; FAX: (301) 443-1731; Email: mhuerta@helix.nih.gov

NINDS - William Heetderks, M.D., Ph.D.; Division of Stroke, Trauma, and Neurodegenerative Disorders; National Institute of Neurological Disorders and Stroke; Neuroscience Center, Room 2207; Bethesda, MD 20892; Telephone: (301) 496-1447; FAX: (301) 480-1080; Email: Heet@nih.gov

NINR - Hilary D. Sigmon, Ph.D., RN; Division of Extramural Activities; National Institute of Nursing Research; 45 Center Drive, Room 3AN12, MSC 6300; Bethesda, MD 20892-6300; Telephone: (301) 594-5970; FAX: (301) 480-8260; Email: hilary_sigmon@nih.gov

NLM - Peter Clepper; Program Officer; National Library of Medicine; 6705 Rockledge Drive, Suite 301; Bethesda, MD 20871; Telephone: (301) 594-4882; FAX: (301) 402-2952; Email: clepper@nlm.nih.gov

Questions on review issues may be directed to:

CSR - Eileen Bradley, D.Sc.; Chief - Surgery, Radiology, and Bioengineering; Center for Scientific Review; 6701 Rockledge Drive; Bethesda, MD 20892; Telephone: (301) 435-1179; FAX: (301) 480-2241; Email: bradleye@csr.nih.gov

Questions on fiscal issues may be directed to:

NCI - Bill Wells; Grants Administration Branch; National Cancer Institute; 6120 Executive Boulevard, Room 243, MSC 7150; Bethesda, MD 20892-7150; Telephone: (301) 496-7800; FAX: (301) 496-8601; Email: wellsw@gab.nci.nih.gov

NCRR - Joellen Harper; Office of Grants Management; National Center for Research Resources; 6705 Rockledge Drive, Room 6086, MSC 7965; Bethesda, MD 20892-7965; Telephone: (301) 435-0836; FAX: (301) 402-1951; Email: harperj@ncrr.nih.gov

NEI - William Derby, Grants Management Officer; National Eye Institute; 6120 Executive Boulevard, Suite 350, MSC 7164; Bethesda, MD 20892-7164; Telephone: (301) 496-5884; FAX: (301) 402-0528

NHGRI - Jean Cahill; Grants Management Officer; National Human Genome Research Institute; Building 31, Room B2B34; 31 Center Drive, MSC 2030; Bethesda, MD 20892-2030; Telephone: (301) 402-0733; FAX: (301) 402-1951; Email: jean_cahill@nih.gov

NHLBI - Jane Davis; National Heart, Lung, and Blood Institute; 6701 Rockledge Drive, Room 7174; Bethesda, MD 20892; Telephone: (301) 435-0166; FAX: (301) 480-3310; Email: jd53f@nih.gov

NIA - Joseph Ellis; Grants and Contracts Management Officer; National Institute on Aging; Gateway Building, Suite 2N212; Bethesda, MD 20892; Telephone: (301) 496-1472; FAX: (301) 402-3672; Email: ellisj@exmur.nia.nih.gov

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AUTHORITY AND REGULATIONS

This program is described in the Catalog of Federal Domestic Assistance Nos. 93.394, 93.395, 93.396, 93.306, 93.867, 93.172, 93.837, 93.838, 93.839, 93.866, 93.273, 93.855, 93.856, 93.846, 93.864, 93.865, 93.929, 93.279, 93.173, 93.121, 93.847, 93.848, 93.849, 93.113, 93.821, 93.859, 93.862, 93.242, 93.853, 93.854, 93.361, and 93.879. Awards are made under authorization of the Public Health Service Act, Sec. 301, Title IV, Part A (Public Law 78-410, as amended by Public Law 99-158, 42 USC 241 and 285). Awards will be administered under PHS grants policies and Federal Regulations 42 CFR Part 52 and 45 CFR Part 74 and Part 92. This program is not subject to the intergovernmental review requirements of Executive Order 12372 or Health Systems review.

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